

Application No. 10/662,638
Amendment dated December 6, 2006
Response to Office Action of August 16, 2006

Amendments to the Drawings:

The attached sheet of drawings includes changes to Fig 2. This sheet, which includes Fig. 1 – 4, replaces the original sheet including Fig. 1 – 4. In Figure 2, previously omitted element label 30 has been added and the dashed line for element 24 has been corrected.

Attachment: Replacement Sheet

REMARKS/ARGUMENTS

Specification

The disclosure was objected to because of the following informalities: page 2, line 23, "so!" is misspelled and on page 2, line 30, "sloop" is misspelled.

The misspellings have been corrected.

Drawings

The drawings were objected to because reference number 30 is not in Figure 2. Figure 2 has been amended to include "30 and the dashed line box for element 24 has been corrected to enclose switch MP0 but not also enclose the resistor. The text identified element 24 as the switch only, p. 6, L 19.

Claim Objections

Claim 15 was objected to because of the following informalities: claim 15 has two periods. Claim 15 is amended.

Claims 13, 18-22 and 27-29 were rejected under 35 U.S.C. 102(b) as being anticipated by McDaniel et al. (USP 6,166,985).

Claims 13 and 21 were rejected under 35 U.S.C. 102(e) as being anticipated by Garg et al. (US 2006/0119991).

Claims 13 and 21 were rejected under 35 U.S.C. 102(e) as being anticipated by Aksamit (US 2004/0266092).

Claim 13 is amended to recite “when the leakage controlled system is operable to enter the sleep mode, the active operation core voltage level slowly decays to the sleep voltage level”. The “slowly decays” between the different modes is not taught nor anticipated by any of the references, McDaniel, Garg and Aksamit. The Examiner raised an issue about “decay” in relation to Claim 22; applicants traverse this as explained below. The references do not teach nor suggest “slow” operation. Therefore, Claim 13 is believed allowable.

Originally objected to Claims 14 – 17 are amended to depend on Claim 13 and/or intervening Claims. They are thus believed allowable. They also have additional limitations not taught by the references. For example, Claim 14 recites “charge storage device”, “pre-charge”, “discharges”, and “undershoot at a voltage level higher than the sleep voltage”; Claim 15 recites “a pre-charge switch”; Claims 16 and 17 recite a “capacitor”.

Claims 18 – 20 dependent on Claim 13 are believed allowable. Further, regarding claims 18-20 and 27-29, the Examiner considered the voltage source (204) to be a switched linear low drop out regulator. Applicants submit 204 is not a switched regulator, nor a linear regulator, nor a low drop-out regulator according to the normal definitions used by one of ordinary skill in the art of power management circuits because in Fig. 2, element 208 is a diode, 217 and 213 are ordinary, single transistor switches. Further, McDaniel states in Col 4, L 11 – 26 that the voltage “collapses” from VDD to VDDi and this can also be seen from switch 213 in the circuit of Fig. 2. So there is no smooth, linear transition.

Claim 22 is cancelled and appended to Claim 21; both are now discussed: Claim 21 is amended to recite “wherein the reference voltage includes a decay that prevents the undesirable regulated supply undershoot”. Applicants respectfully traverse the Examiner’s statement: “Regarding claim 22, the decay limitation is seen anticipated by the transistors (213, 208 and 217) whose propagation delay decaying the amplitude of the core supply voltage Vdd”.

McDaniel states instead, transistors 208 and 217 are to add current, Col 4 L 23–26, Col 5 L 37 – 66. Further, as noted above, McDaniel states in Col 4, L 11 – 26 that the voltage “collapses” from VDD to VDDi and this can also be seen from switch 213 in the circuit of Fig. 2; it merely switches between VDD and VDDi. In fact, from circuit analysis of Fig. 2 of McDaniel, the switching action of 213 and 207, is very sudden (hence he uses the word, “collapse”) and there is undoubtedly an overshoot and undershoot. So, none of the references, McDaniel, Garg, Aksamit, teach a “decay”, nor “prevents the undesirable regulated supply undershoot”.

Therefore, Claim 21, as amended, is believed allowable over the references.

Originally objected-to Claims 23 – 26 are amended to depend on Claim 21 and/or intervening Claims. They are thus believed allowable. They also have additional limitations not taught by the references. For example, Claim 23 recites “charge storage” and “discharge”; Claim 24 recites “a pre-charge switch”; Claims 25 and 26 recite a “capacitor”.

Claims 27 – 29 depend on Claim 21 and are believed allowable for the reasons described above.

Allowable Subject Matter

Applicants thank the Examiner for allowing Claims 1-12. For clarification purposes, Claims 1, 6 are currently amended to recite “decay” instead of “discharge”. A voltage is not something which “discharges”; it is more accurate to use the word “decay”. Antecedent issues in Claims 2 and 7, and typo “s” in Claim 6 are amended. Being obvious changes, the amended Claims are believed still allowable.

Claims 14-17 and 23-26 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten. The amendments to these claims are described above.

New Claims

New Claim 30 recites "the circuit comprising a charge storage device that is pre-charged to the active operation core voltage level when the leakage controlled system is in its active mode, such that when the system enters it sleep mode, the charge storage device slowly discharges to the sleep voltage level". The "charge storage device" and the "pre-charge" and "discharges" during the different modes are not taught nor anticipated by any of the references, McDaniel, Garg and Aksamit. Therefore, Claim 30 is believed allowable.

Respectful request is made for reconsideration of the application, as amended, and for an issuance of a Notice of Allowance.

Respectfully submitted,

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